Selected Abstracts from the May Issue of the European Journal of Vascular and Endovascular Surgery

Piergiorgio Cao, MD, FRCS, Editor-in-Chief, and Jean-Baptiste Ricco, MD, PhD, Senior Editor

Fenestrated Endovascular Grafting: The French Multicentre Experience

Amiot S., Haulon S., Becquemin J.-P., Magnan P.-E., Lermusiaux P., Goueffic Y., Jean-Baptiste E., Cochennec F., Favre J.-P., Association Universitaire de Recherche en Chirurgie Vasculaire (AURC). Eur J Vasc Endovasc Surg 2010;39:in press.

Purpose: This study aims to evaluate the medium-term outcomes following aortic aneurysm repair using fenestrated endografts performed in 16 French academic centres.

Materials and methods: A retrospective analysis of prospectively collected data was carried out. This study included all patients treated with fenestrated endografts in France between May 2004 and January 2009. Patients were judged to be at high risk for open surgical repair. Fenestrated endografts were designed using computed tomography (CT) reconstructions performed on three-dimensional (3D) workstations. All patients were evaluated with CT, duplex ultrasound and plain film radiograph at discharge, 6, 12, 18 and 24 months, and annually thereafter.

Results: A total of 134 patients (129 males) were treated over the study period. Median age and aneurysm size were 73 years (range 48–91 years) and 56 mm (range 45–91 mm), respectively. A total of 403 visceral vessels were perfused through a fabric fenestration, including 265 renal arteries. One early conversion to open surgery was required. Completion angiography and discharge CT scan showed that 398/403 (99%) and 389/394 (99%) respective target vessels were patent. The 30-day mortality rate was 2% (3/134). Pre-discharge imaging identified 16 (12%) endoleaks: three type I, 12 type II and one type III. After the procedure, transient or permanent dialysis was required in four (3%) and two (1%) patients, respectively. The median duration of follow-up was 15 months (range 2–53 months). No aneurysms ruptured or required open conversion during the follow-up period. Twelve of 131 patients (9%) died during follow-up (actuarial survival at 12 and 24 months: 93% and 86%, respectively). Median time from procedure to death was 15 months. None of these deaths were aneurysm related. Aneurysm sac size decreased by more than 5 mm in 52%, 65.6% and 75% of patients at 1, 2 and 3 years, respectively. Three (4%) patients had sac enlargement within the first year, associated with a persistent endoleak. During follow-up, four renal artery occlusions were detected. A total of 12 procedure-related re-interventions were performed in 12 patients during follow-up, including six to correct endoleaks, and five to correct threatened visceral vessels.

Conclusions: The use of endovascular prostheses with graft material incorporating the visceral arteries is safe and effective in preventing rupture in the medium term. A predictable high mortality rate was depicted during follow-up in this high-risk cohort. Meticulous follow-up to assess sac behaviour and visceral ostia is critical to ensure optimal results.

Secondary Interventions Following Endovascular Aneurysm Repair (EVAR) and the Enduring Value of Graft Surveillance

Nordon I.M., Karthikesalingam A., Hinchliffe R.J., Holt P.J., Loftus I.M., Thompson M.M. Eur J Vasc Endovasc Surg 2010;39:in press.

Objective: Lifelong imaging surveillance is currently recommended for all patients following endovascular aortic aneurysm repair (EVR). The modality, timing and overall necessity of surveillance has recently been brought into question. This review reports contemporary secondary intervention rates and explores surveillance imaging pick-up rates and reports the evidence supporting modified EVR surveillance programs.

Design: Systematic review of literature (2002–2009) and meta-analysis of Kaplan–Meier re-intervention-free survival estimates.

Results: 32 Papers were included in final analysis. 17,987 EVR cases were reported. Crude annual secondary intervention rates from the US population registries were 3.7%/year (range 1.7–4.3%). Combined re-intervention-free survival estimates, from 14 series (10,365 cases), demonstrated a linear progression with 89.9%, 86.9% and 81.5% of grafts without secondary procedures at 2, 3 and 5 years respectively.

3 Reports (1249 cases) differentiated between interventions directed by surveillance or outside surveillance protocols. Surveillance imaging alone initiated the secondary interventions in 1.4–9% of cases; >90% of EVR cases received no benefits from surveillance scans.

Discussion: Some format of surveillance following EVR probably remains necessary despite a reduction in secondary interventions with modern stent-grafts. Surveillance should be targeted at those stent-grafts and patients at high risk of complications. Further work is justified to identify this group.

Different Effects of Commonly Prescribed Statins on Abdominal Aortic Aneurysm Wall Biology

Hurks R., Hoefer I.E., Vink A., Pasterkamp G., Schoneveld A., Kerver M., de Vries J.-P.PM., Tangelder M.J., Moll F.L. Eur J Vasc Endovasc Surg 2010;39:in press.

Background: Pharmaceutical stabilisation of the abdominal aortic aneurysm (AAA) wall can delay surgery and improve outcome. Observational studies indicate statins can be used to reduce AAA growth but mechanistic data are scarce. In this study, our aim was to determine the pleiotropic effects of different statins on AAA wall composition.

Methods: We included 216 patients undergoing open AAA repair, of which 60 used simvastatin, 52 atorvastatin and 23 pravastatin. The AAA wall histology and protein expression (IL 1β,2,4,5,6,8,10,12, interferon-gamma (IFNγ), tumour necrosis factor (TNF)α,β, matrix metalloproteinase (MMP)2 and 9 activities, total MMP8,9 and cathepsin A and B levels) between statin users and non-users were compared as also among the use of different statins.

Results: As far as histological inflammation goes, the AAA walls of statin users did not differ from those not using them. After multivariate adjustment for risk factors, pravastatin use was associated with tendencies of increased MMP8 ($p = 0.022$), active MMP9 ($p = 0.040$) and higher cathepsin B ($p = 0.056$) levels. The AAA walls of simvastatin and atorvastatin users showed no differences in proteases or cytokines in multivariate analyses.

Conclusions: The use of statins was not associated with a decrease in protease levels or inflammation. The trends of elevated protease levels associated with pravastatin use suggest pleiotropic differences among the various statins, supporting the need for further research to target pharmaceutical AAA treatment.

Interobserver Agreement of the TASC II Classification for Supra- and Infrainguinal Lesions

Zimmermann A., Wendorff H., Schuster T., Auer F., Berger H., Eckstein H.-H. Eur J Vasc Endovasc Surg 2010;39:in press.

Objectives: The Trans-Atlantic Inter-Society Document on Management of Peripheral Arterial Disease (TASC) gives treatment recommendations depending on the classification of aorto-iliacal or femoro-popliteal vascular pathologies. Therefore, the best treatment could only be offered if the right TASC classification was obtained. The purpose of this study was to assess the interobserver agreement of the evaluation of the TASC II classification for peripheral arterial occlusive disease (PAOD) in magnetic resonance angiography (MRA).

Patients and methods: Three hundred arterial segments of 149 patients with a magnetic MRA for PAOD were evaluated according to the TASC II classification. A resident and a consultant for radiology and vascular surgery both performed independent grading. A comparative assessment of the consensus agreement was quantified by the marginal probabilities calculated by generalised estimation equation models, as well as by using the weighted kappa coefficient (κ), classified according to Altman.

Results: In relation to the consensus, the overall agreement was good to excellent for the consultants of radiology and vascular surgery. The consultants obtained a statistically significant higher agreement than did the residents (Odds ratio (OR): 2.86, 95% confidence interval (CI): 2.21–3.69, $p < 0.001$). A significantly higher consensus agreement probability was observed for the surgeons compared with the radiologists (OR: 1.43, 95% CI: 1.11–1.84, $p = 0.006$) and for the femoro-popliteal regions compared with the aorto-iliacal regions (OR: 1.64, 95% CI: 1.12–2.14, $p = 0.012$).

Conclusion: Although good results can be achieved in the assessment of vascular lesions according to the TASC II document, a simplification of this classification could increase its practicability in a daily clinical routine.

Predictive Risk Factors for Restenosis after Remote Superficial Femoral Artery Endarterectomy

Derksen W.J.M., Gisbertz S.S., Hellings W.E., Vink A., de Kleijn D.P.V., de Vries J.-P.P.M., Moll F.L., Pasterkamp G. Eur J Vasc Endovasc Surg 2010;39:in press.

Objectives: Restenosis following remote superficial femoral artery endarterectomy (RSFAE) remains a challenging problem. The determinants